

GLI OCEAN VALIDATION PLAN

Motoaki Kishino

The Institute of Physical and Chemical Research

GLI Ocean Group Leader

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GLIOCEAN Products

◆ Standard Products

Water-Leaving Radiance (nLw, Aerosols)

Chlorophyll *a*, CDOM, SS, K490

Bulk SST

◆ Research Products

Accessory pigment (Carotenoid, Phycobilin)

Phytoplankton species (Trichodesmium, Coccolithus)

Natural fluorescence

PAR

Primary production

Absorption of suspended particles

skin SST

GLIOCEAN Standard Product Validation Flowchart

- | | |
|---|---|
| ◆ Truth Data by Ship, Buoy | Institutes, Universities |
| ◆ Truth data collection | EORC and Cal/Val PI and CoI |
| ◆ Truth data analysis | EORC |
| ◆ Truth data base | EORC_Data_Base |
| ◆ Making match up data | EORC |
| ◆ Match up data base | EORC_data_base |
| ◆ Validation of GLI algorithms | GLI Cal/Val Team and Algorithm PI |
| ◆ Revise of GLI algorithms and
vicarious calibration | and Algorithm PI |
| ◆ Evaluation of revised results | GLI Cal/Val Team, Cal/Val and
Algorithm PI |
| ◆ Revision of Process Software and
Reprocessing | EORC and EOC |
| ◆ Notice of the revision | EORC |

GLIOCEAN Validation

◆ Atmospheric Correction

Combination with Radiative Transfer Model

Statistical Method

Vicarious Calibration

◆ Bio-optical Parameters

Statistical Method between L-2 Products and Truth Data Set

Combination with Truth data and Bio-optical Model

Comparisons with satellite data SeaWiFS, MODIS

◆ Sea Surface Temperature

Comparisons with satellite data MODIS, ASTER, AVHRR

Top of atmosphere radiation, MCSST

Vicarious Calibration

Skin SST Observation, Atmospheric parameters, Modeling

Global bulk SST Statistics between L-2 Products and Truth Data Set

GLIOCEAN Major Ocean Test Sites

◆ Domestic Collaboration

North Pacific Ocean

Bering Sea

Okhotsk Sea

Japan Sea

Yellow sea and East China Sea

Equatorial Pacific Ocean

Antarctic Ocean

Funka Bay

Tokyo Bay & Sagami Bay

Seto Inland Sea

Major Ocean Test Sites (Cont.)

◆ International Collaboration

Marine Optical Boy (MOBY)

Hawaiian Ocean Time Series

(HOTS)

Bermuda Atlantic Time Series

(BATS)

Southern California Bight

(CalCOFI)

Antarctic Sea

Middle Atlantic Bight

East Gulf of Mexico

Chesapeake Bay

Tasmania Sea Australia

Baltic/North Sea

European Sits

Atlantic Meridional Transits

UK

North Atlantic Ocean

East Asian Coast

Singapore, Thailand,

Indonesia, China

Off South Africa

Major Ocean Test Sites (Cont.)

- ◆ **Mooring and Drifting Buoy System data for SST**
 - JIMA Station around Japan Islands**
 - TOGA-TAO**
 - NDBC**
 - off Thailand**

- ◆ **Maritime Aerosol Optical Site**
 - Japan Niigata, Okinawa**
 - On board Sun photometer**
 - AERONET Collaboration with**
 - Atmospheric science group**

GLIOCEAN Field Activities

◆ Domestic Collaboration

Fishery Agency (National Fisheries Research Institute)

Hokkaido, Tohoku, Japan Sea, Far Sea, Seikai,

Nansei, National Institute of Fishery Science

Japan Fisheries Information Service Center

National Institute for Resources and Environment

National Institute for Environmental Studies

The Institute of Physical and Chemical Research

Japan marine Science and Technology Center

Field Activities (Cont.)

◆ University

Faculty of Fisheries, Hokkaido University

Center of Atmospheric and Ocean Study of Science, Tohoku University

Ocean Research Institute, University of Tokyo

Graduate School of Agricultural and Life Science, University of Tokyo

Tokyo University of Fisheries

Laboratory of Biological Oceanography, Soka University

Department of Oceanography, Tokai University

Institute for Atmospheric and Hydrospheric Science, Nagoya University

University of Hiroshima

University of Nagasaki

University of Kyusyu

National Institute of Polar Research

Field Activities (Cont.)

◆ International Collaboration

US

NASA MODOCEAN, SIMBIOS Project

NASA-NOAA MOBY

Other university and institutes

Other Countries (Universities, Institutes, Agency)

European Countries UK, Italy, German, etc..

East Asian Countries Singapore, Thailand,
Indonesia, Korea, China, etc..

Australia, South Africa and others

Other Field Activity (Field Campaigns)

- ◆ **Domestic**

 - Off Sanriku**

 - East China Sea**

 - Japan Sea**

- ◆ **International**

 - South Eastern Asian Coast**

 - Collaboration with MODOCEAN**

8th JUWOC Summary of Discussion

- 1. After OCTS and SeaWiFS, many ocean color sensors, including MODIS and GLI, are being planned. In order to establish an useful long term time series of global ocean color data to detect global changes, those ocean color data should be properly calibrated. The calibration efforts should be made the different sensors as consistent as possible.**
- 2. Specifically, inter-calibration efforts between near future sensors, which will be operated in a same time frame (cf. MODIS and GLI), are required.**
- 3. Systems to exchange MODIS and GLI data between the space agencies and to distribute the data to scientists are required, as extensions of I-LAC project of OCTS and SeaWiFS.**
- 4. In order to establish the consistent scientific and engineering understanding of the data, exchanges of information and software for processing each satellite data are required.**

JUWOC (Cont.)

- 5. Assessment and comparison of OCTS-SeaWiFS-MODIS-GLI algorithms, such as in-water, atmospheric correction, banding algorithms, and vicarious calibration, are required.**
- 6. Joint efforts to obtain sea truth data, including ship and optical buoy, for vicarious calibration and validation are required. Combination of optical buoy systems, YBOM in a high chlorophyll region and MOBY in a low chlorophyll region, have been very useful for vicarious calibration and verification of OCTS and SeaWiFS, and continuation of those efforts are highly recommended for future missions.**
- 7. Efforts to share sea-truth data (Lw, Chl) are required. The data set should be useful for both development of in-water algorithm and calibration and validation of satellite data. Complementary sea-truth data sets, which include simultaneous observations of many bio-optical properties from same water, are recommended for the development of in-water algorithm.**
- 8. Continue JUWOC. JUWOC No. 9 should be in Japan with coming GLI workshop.**

MODIS-GLI Cooperation

- 1. Satellite data exchange**
- 2. Truth data exchange for vicarious calibration and validation ship, optical buoy**
- 3. Information and software exchange**
- 4. Assessment and comparison of atmospheric correction, in-water and binding algorithms, and vicarious cal.**
- 5. Inter-Calibration between MODIS and GLI in s same time frame.**
- 6. Consistent binding of Ocean Color; CZCS-OCTS-SeaWiFS-MODIS-GLI-..... for long term time series**